

The name-bearing types of Odonata held in the Natural History Museum of Zimbabwe, with systematic notes on Afrotropical taxa. Part 1: introduction and Anisoptera

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ABSTRACT

Orthographic details of 118 name-bearing types of Odonata are provided in two parts: the first and present paper deals with Anisoptera, the second with Zygoptera. 58 types pertain to good species, although the taxonomy of at least four is problematic. The details of 11 'holotypes' of forms are also provided, although these and their names have no nomenclatory status. The taxonomy of the Afrotropical members of *Microgomphus* is discussed, as are the *supinus*-group of *Onychogomphus*, the *fritillarius*-group of *Paragomphus*, the genus *Tragogomphus*, and the *basitincta*-group of *Trithemis*. *Microgomphus bivittatus* is transferred to *Lestinogomphus*, and *Tragogomphus seydeli* to *Onychogomphus*. *Heliaeschna longfieldae* is a junior synonym of *H. sembe*; *Microgomphus mozambicensis* and probably *M. schoutedeni* of *M. nyassicus*; *Onychogomphus quirrkii* and *O. septemflavum* of *O. seydeli*; *Paragomphus dicksoni* of *P. cognatus*; *Aethiothemis watulikii* of *A. basilewskyi*; *Eleuthemis quadrigutta* of *E. buettikoferi*; *Malgassophlebia aequatoris*, *M. longistipes* and *M. nigeriae* of *M. bispina*; *Tetrathemis bifida* and *T. sulci* of *T. camerunensis*; *Trithemis jacksoni* of *T. arteriosa*. It was confirmed that *Gynacantha ochraceipes* is a junior synonym of *G. vesiculata*; *Macromia paludosa* of *Phyllomacromia overlaeti*; *Trithemis falconis* of *T. aequalis*; *Zygonyx ikomae* of *Z. natalensis*.

INTRODUCTION

Elliot Charles Gordon Pinhey (1910-1999) published almost 200 names for species, subspecies and forms of Odonata in thirty-three years, from 1950 to 1982. He named more than a tenth of known Afrotropical species, making him the most prolific author of that fauna aside from his trailblazer Frederic Fraser (Dijkstra et al. 2003). Sixty-three percent of his primary types are held in the Natural History Museum of Zimbabwe in Bulawayo (NMBZ), where he worked from 1955 to 1980. His legacy is one of the major collections of African Odonata in the world and the most important one in the continent itself (Vick et al. 2001). Aside from the 112 name-bearing types designated by Pinhey, the collection includes five designated by Cammaerts (1968, 2004) and one by d'Andrea & Carfi (1997). The holotype of a

new *Syncordulia* species is also in NMBZ (Dijkstra et al. 2007). A list of the type specimens held in NMBZ, including secondary types, was provided by Hancock et al. (1995). The present paper aims to supply full details of the name-bearing types of the Anisoptera and to reappraise their taxonomic status. The Zygoptera will be treated in a second paper (Dijkstra 2007).

To interpret Pinhey's work a few characteristics are worth noting:

1. Pinhey favoured naming (regional) varieties as subspecies or forms. For instance, melanic varieties are frequent in Pinhey's (1964b) B-group of *Pseudagrion* Selys, 1876: NMBZ possesses 'holotypes' of dark varieties pertaining to five different species in that group (see Part 2). When Pinhey discovered that one of his species was a junior synonym, he often retained the name for a subspecies or form, e.g. in 11 of 18 cases in the present catalogue (both parts). Considering the variability of many species, fragmentary collecting within their often large ranges, and the general lack of (geographic) analysis of the variation concerned, most forms and subspecies and even many species appear to be superfluous (Clausnitzer 2003b; Dijkstra 2003a, 2003b, 2005a; Dijkstra et al. 2006). Consequently, many of Pinhey's taxa are treated as redundant. About half of the names he introduced are considered to belong to good species. The term 'form' has only been applied here for variations named by Pinhey, otherwise the term 'variety' is used to denote variability within species.
2. Pinhey's use of Latin grammar was sometimes inconsistent, especially in the use of the suffix '-ii' vs '-i'; see type labels of *Ceriagrion sakejii*, *Ischnura hilli* (Part 2), *Aeshna moori* and *Aethiothemis watulikii*. *Chlorocnemis nubilipennis rossii*, *Pseudagrion symoensii*, *Onychogomphus quirikii*, *O. rossii* and *Orthetrum chrysostigma toddii* were based on person's names neither latinised nor ending on -i, but should be written in the original spelling. The derivation of *C. sakejii* (after the Sakeji school), *Pseudagrion assegaii* (*assegai*, a South African spear), *Gomphidia quarrei confinii* (Italian confini [borders], referring to border region of Mozambique and Zimbabwe) and *A. watulikii* (collector B.K. Watuliki) is correct. Inconsistencies of gender mainly followed the fairly frequent treatment of the neutral suffix '-agrion' as masculine.
3. Pinhey frequently omitted details of the collector from labels, although this information is usually found in the relevant publication. This is the case in 66% of the types listed below, although in up to 74% of those cases Pinhey himself or a close associate (e.g. technical assistant) was probably the collector.
4. Pinhey obtained material from species-rich, poorly accessible areas, such as NW Congo-Brazzaville and near the confluence of the Angola, Congo-Kinshasa and Zambia borders. Therefore his collection includes a large proportion of 'rare' species. Species described by Pinhey and known only from the type series and/or material in NMBZ are *Chlorocypha rubriventris*, *Africallagma cuneistigma*, *Pseudagrion estesi*, *Aciagrion macrothithenae*, *A. nodosum*, *A. zambiense*, *Aeshna moori*, *Onychogomphus rossii*, *Paragomphus zambeziensis* and *Trithemis fumosa*. New records have only come to light recently for *Prodasineura flavifacies*, *Ceriagrion mourae* and *Paragomphus cataractae*. Other rarities are *Chlorocypha frigida*, *C. schmidtii*, *Platycypha picta*, *Elatoneura incerta*, *Allocnemis mitwabae*, *Pseudagrion coeruleipunctum*, *P. greeni*, *Crocothemis brevistigma*, *Neodythemis fitzgeraldi* and *Trithemis brydeni*.

METHODS

The type collection of Odonata in NMBZ was studied during six days from 9 to 16 February 2006. All material is in good condition. With the exception of two pinned specimens kept in the main collection, all holotypes are stored in cellophane envelopes, which are pinned flat into large drawers (Fig. 1a) in fire-proof type cabinets. Each specimen was photographed with its labels (Fig. 1b) and bears:

1. Accession label "Access. No./ NMZ [number]".
2. Identification hand-written with black ink on the envelope, occasionally accompanied by descriptive or collection details.
3. Pink label with the type designation, hand-written.
4. White label with collection data, variably printed and/or hand-written.
5. Occasionally one or two additional white labels with notes, preliminary identifications or supplementary collection details.

Below, names of taxa are listed alphabetically under each family, followed in parentheses by their original generic combination and taxonomic status. Each name is followed by the full orthography of labels and envelope, in the order stated above. Lines are separated by a slash and a space. Texts have been copied as precisely as possible, including the use of capitals, spaces and abbreviations; assumed misspellings and relevant annotations are indicated or corrected in square brackets. Details of 'holotypes' of forms, which are not name-bearing, are given between square brackets. The unpublished names of types of *Enallagma vansomereni occidentalis* and *Tetraethemis cowleyi* designated by Pinhey and one *Lestiniogomphus* species designated by R. Cammaerts are not available (Hancock et al. 1995) and are not listed.

Where relevant, label data are followed by an annotation on the status or identification of the taxon, or the condition of the specimen. Taxa are considered as good species and specimens are in a good state unless stated otherwise. Problematic specimens were photographed in detail and compared with photographs of relevant material taken in other collections. Details of non-NMBZ types are provided in all cases of new or reverted synonymies. Page numbers are provided for all publications where a taxonomic change has been made.

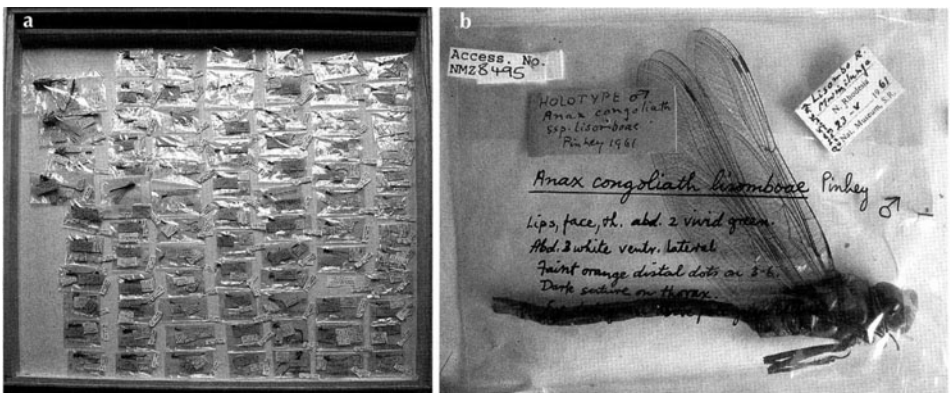


Figure 1: Odonata in the Natural History Museum of Zimbabwe in Bulawayo — (a) drawer with type specimens; (b) holotype of *Anax congoliath lisomboae*.

Acronyms for collections (also for Part 2):

| | |
|------|--|
| BMNH | Natural History Museum, London |
| ISNB | Institut Royal des Sciences Naturelles de Belgique, Brussels |
| MCSN | Museo Civico di Storia Naturale 'Giacomo Doria', Genova |
| MDLA | Museu do Dundo, Chitato (Angola) |
| MLUH | Wissenschaftsbereich Zoologie der Martin-Luther-Universität, Halle |
| MNHN | Muséum National d'Histoire Naturelle, Paris |
| MNMS | Museo Nacional de Ciencias Naturales, Madrid |
| MRAC | Musée Royal de l'Afrique Centrale, Tervuren |
| MZUF | Museo Zoologico 'La Specola', Firenze |
| NHRS | Naturhistoriska Riksmuseet, Stockholm |
| NMKE | National Museums of Kenya, Nairobi |
| NMW | Naturhistorisches Museum Wien, Wien |
| NMBZ | Natural History Museum of Zimbabwe, Bulawayo |
| RMNH | Nationaal Natuurhistorisch Museum Naturalis, Leiden |
| SUEC | Stellenbosch University Entomology Collection, Stellenbosch |
| UCME | Departemento de Biología, Universidad Complutense, Madrid |
| ZMHB | Museum für Naturkunde der Humboldt-Universität, Berlin |
| ZMUH | Zoologisches Institut und Museum, Universität von Hamburg, Hamburg |

LIST OF HOLOTYPES (ANISOPTERA)

AESHNIDAE

lisomboae (ssp. *Anax congoliath*) Pinhey, 1962a: 908. — 8495; *Anax congoliath* *lisomboae* Pinhey/ ♂/ Lips, face, th. abd. 2 vivid green./ Abd. 3 white ventr. lateral/ Faint orange distal dots on 3-6./ Dark suture on thorax./ Eye dark green above pale green below [sic].; HOLOTYPE ♂/ *Anax congoliath*/ ssp. *lisomboae*/ Pinhey 1961; Lisombo R./ Mwinilunga/ N. Rhodesia/ 23-V-1961/ Nat. Museum, S.R./ *Anax/ congoliath* ssp.

Smaller variety of *A. congoliath* Fraser, 1953.

moori (*Aeshna*) Pinhey, 1981b: 64. — 8256; *Aeshna moorii* [sic] Pinhey/ ♂; Holotype ♂/ *Aeshna moorii* [sic]/ spec. nov./ E. Pinhey 1980; Kamankundju River/ Sakeji, Congo Rd/ Ikelenge/ Mwinilunga/ Zambia/ 19-IV-1972/ Nat. Mus. Bulawayo/ de Moor/ leg. E. Pinhey; Labr. yellow, face and frons/ green, eye green, yellow postventr./ marks thorax, abd. pale green.

Known only from the holo- and allotype, collected seven years apart in the same vicinity. The holotype is in fairly good condition, but the abdominal markings are indiscernible. The frontal mark is clearly preserved and is not ocellate as in *A. rileyi* Calvert, 1892 and its relatives, although Pinhey's description that the "stem [is] slightly more swollen near base and edged with yellow" indicates some similarity (Fig. 2a). The pale anterior crescent on the black vertex, which strengthens the bull's-eye allusion in most *A. rileyi* (Fig. 2b), is absent. The genital lobes are long, gradually tapered and strongly curved (Fig. 2c). The male is large with fairly short Pt (Hw 48.5 mm; abdomen without appendages 54.8 mm; Fw Pt 4.0 mm; Hw Pt 3.9 mm — *A. rileyi*: Hw 40-45 mm; Pts about 4 mm). The allotype female is more stained, but has an identical frontal mark, and is also large (Hw 52.8 mm; abdomen 52.7 mm; Fw Pt 4.6 mm; Hw Pt 4.1 mm). The large size, short Pt, genital lobe and appendages

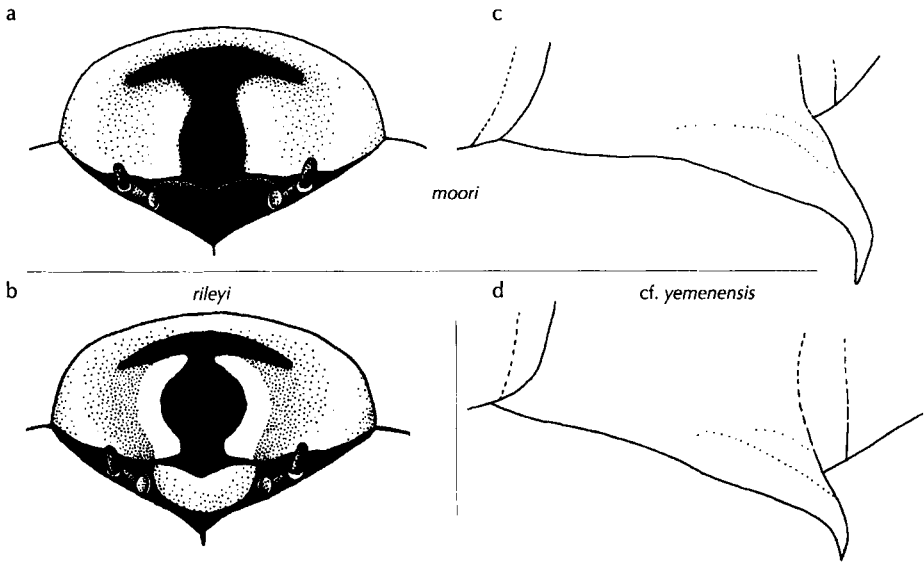


Figure 2: *Aeshna* males — (a) *A. moori*, frons in dorsal view; (b) *A. rileyi*, frons in dorsal view; (c) *A. moori*, genital lobe in lateral view; (d) *A. cf. yemenensis* from Ethiopia, genital lobe in lateral view.

place *A. moori* close to *A. meruensis* Sjöstedt, 1909 and especially to *A. yemenensis* Waterston, 1985 and its unnamed relative from Ethiopia (Fig. 2d; see Clausnitzer & Dijkstra 2005).

***ochraceipes* (*Acanthagyna*)** Pinhey, 1960: 511. — 8930; *Gynacantha ochraceipes* Pinhey ♂/ Oxf. University Tanganyika Exp./ J.A. Cooke; HOLOTYPE ♂/ *Acanthagyna/ ochraceipes/* Pinh. 1959; Kasoge, 2550' Lake Tanganyika/ 16.IX.1959/ Nat. Museum/ S. Rhodesia/ J.A. Cooke.

The synonymy with *Gynacantha vesiculata* Karsch, 1891 found by Dijkstra (2005b: 10) is confirmed. Hw 44.7 mm and 21-22 Fw Ax are slightly below the species' average.

***raphaeli* (ssp. *Aeshna rileyi*)** Pinhey, 1964a: 112. — 8258; *Aeshna rileyi raphaeli* Pinhey/ ♂; Holotype ♂/ *Aeshna rileyi/ raphaeli/* ssp. Pinhey 1963; SAKEJI River/ IKELANGE/ Mwinilunga/ N. Rhodesia/ IV - 1963/ Nat.Mus.S.R.; Coll. Raphael Mpala.

A small variety of *A. rileyi* Calvert, 1892 (Hw 40.6 mm; range in species 40-45 mm).

***sembe* (*Heliaeschna*)** Pinhey, 1962b: 39. — 9137; *Heliaeschna sembe* Pinhey/ ♂; HOLOTYPE ♂/ *Heliaeschna/ sembe/* Pinhey 1960; Sembe For./ Souanke/ Fr. Equ Afr./ I 1960/ Nat. Museum/ S. Rhodesia.

Combines narrowly black-banded thoracic sutures, long Pt (3.8 mm in Fw, above 5 cells) and long epiproct, which Dijkstra (2005b) found to be diagnostic of the male of *H. longfieldae* (Gambles 1967: 200. Mt Cameroon; BMNH) [new synonymy]. Hw 41.7 mm, 25-25 Fw Ax and 9-10 anal loop cells are slightly below the species' average, but well within its range. Dijkstra (2005b: 22) suggested the synonymy with either *H. longfieldae* or *H. ugandica* McLachlan, 1896.

GOMPHIDAE

alius (*Neurogomphus*) Cammaerts, 2004: 114. — 10303; *Neurogomphus alius* Cammaerts/ ♂; Holotype ♂/ *Neurogomphus/ alius* Cammaerts; Mekoum For./ Souanke Dist/ M. Congo/ III 1960/ Nat. Museum/ S. Rhodesia; R. Cammaerts det., 1973/ *Neurogomphus/ alius* sp.nov./ R. Cammaerts det., 197[?]/ HOLOTYPE; Mekoum.

brunneus (*Phyllogomphus*) Pinhey, 1976: 555. — 10326; *Phyllogomphus brunneus* Pinhey/ ♂/ eye olive/ yellow vent; Holotype ♂/ *Phyllogomphus/ brunneus/ spec. nov./ Jan. 1976; 4 - Riv. Camp, 19°03S, 23°10E, Okavango/ BOTSWANA; 7-XII-1973/ Nat. Mus Bulawayo/ Pinhey-Fal.Coll.Exp.*

Junior synonym of *P. selysi* Schouteden, 1933 (Dijkstra et al. 2006: 10).

cataractae (*Paragomphus*) Pinhey, 1963b: 156. — 10855; *Paragomphus cataractae* Pinhey/ ♂/ Eye dark grey/ paler below, Face + th. to abd. II/ bright green like viridior rest of/ abd yellow + brown; HOLOTYPE ♂/ *Paragomphus/ cataractae/ Pinh. 1962; Vict. Falls/ Rhodesia/ X11-55/ Nat. Mus./ S. Rhodesia.*

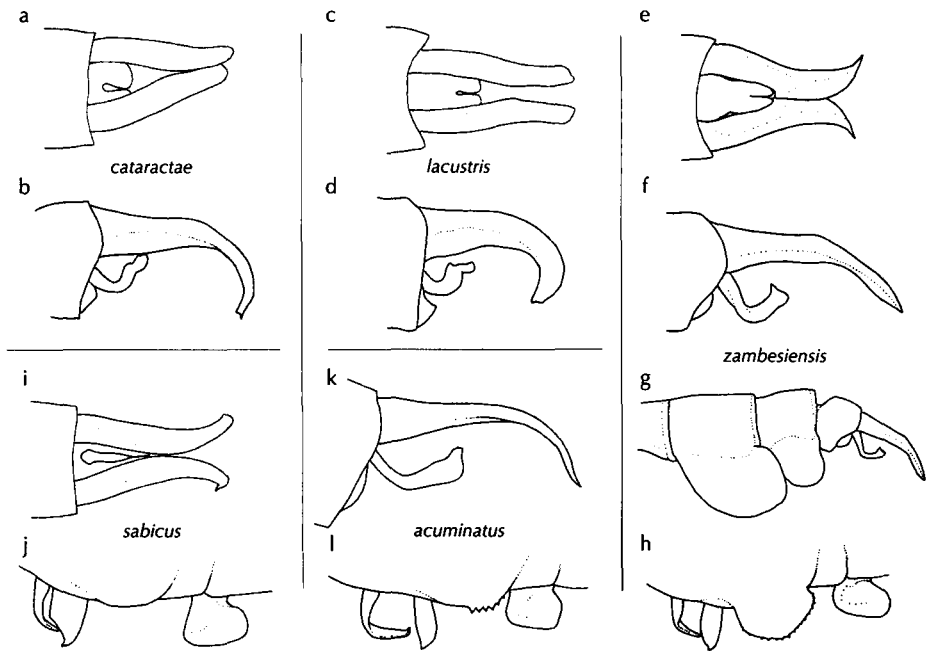


Figure 3: *Paragomphus* males — (a) *P. cataractae*, appendages in dorsal view, (b) same, lateral view; (c) *P. lacustris*, appendages in dorsal view, (d) same, lateral view; [e-h] *P. zambeziensis* – (e) appendages in dorsal view, (f) same, lateral, (g) S8-10 in lateral view, (h) secondary genitalia in lateral view, penis omitted; (i) *P. sabicus*, appendages in dorsal view – *P. acuminatus* is similar, (j) *P. sabicus*, secondary genitalia in lateral view, penis omitted; (k) *P. acuminatus*, appendages in lateral view – *P. sabicus* is similar, (l) *P. acuminatus*, secondary genitalia in lateral view, penis omitted.

Described after Pinhey concluded it was distinct from the holotype of *P. lacustris* (ZMHB). Nonetheless Pinhey & Pinhey (1984) reported two specimens as *P. cataractae* from W Tanzania (RMNH) that agree entirely with the *P. lacustris* holotype. Both species are easily separated by their appendages (Figs 3a-d). *P. cataractae* is known only from rapids and waterfalls in big rivers such as the Zambezi, Okavango and possibly Kunene (Pinhey 1984; F. Suhling in litt.).

cocytius (*Neurogomphus*) Cammaerts, 2004: 127. — 10264; *Neurogomphus* [crossed out: wittei] vicinus Schout./ ♂; R. Cammaerts det.,/ 1997/ *Neurogomphus*/ *cocytius* sp. nov./ HOLOTYPE ♂; KATAMBORA/ ZAMBEZI R./ N. Rhodesia/ 31-V-1961/ Nat. Museum, S.R.; R. Cammaerts det., 1974/ *Neurogomphus*/ ?vicinus Sch./ ex ♂ 1; Penis.

confinii (ssp. *Gomphidia quarrei*) Pinhey, 1974: 3. — 10184; *Gomphidia quarrei* *confinii* Pinhey/ ♂; Holotype ♂/ *Gomphidia quarrei*/ *confinii* Pinhey, 1974/ subsp. nov.; Busi River/ Espungabera/ Mocambique/ 20-I-1966/ Nat. Museum/ S. Rhodesia.

Fairly dark variety that falls within the broad variation of *G. quarrei* (Schouteden, 1934).

dicksoni (*Paragomphus*) Pinhey, 1969a: 3. — 11026; *Paragomphus dicksoni* Pinhey/ ♀; Holotype ♀/ *Paragomphus*/ *dicksoni*/ Pinhey, (1969); Oudebosch/ nr. Rivier Zonderend/ Cape Province/ 15-XII-1968/ Nat. Museum, S.R./ leg. C.G.C. Dickson.

Agrees in details of the occiput and configuration of markings with females from throughout South Africa (NMBZ, SUEC) identified as *P. cognatus* (Rambur, 1842: 167 in *Gomphus. Sine patria*; MNHN), which is the only species of the genus in the Cape region [new synonymy]. Two males of *P. cognatus* from South Africa in NMBZ were already labelled as “*P. dicksoni*” by Pinhey and as “*P. cognatus dicksoni*” by R. Cammaerts (July 1976). The teneral female holotype of *P. cognatus* was not available for study and was described without locality details. However, the species is well-known as defined by Selys (1854), who illustrated it in detail and studied the holotype (Selys 1858).

dissimilis (*Neurogomphus* [*Mastigogomphus*]) Cammaerts, 2004: 165. — 10307; *Neurogomphus dissimilis* sp. nov. [crossed out: (Allotype)]/ ♂/ Katombora Rapids/ Katombora/ Zambezi River/ ZIMBABWE/ 10/12/82/ Nat. Mus - Falc. Coll. Exp/ Coll D.L. Hancock & R. Chahwanda; R. Cammaerts det.,/ 1997/ *Neurogomphus*/ *dissimilis* sp. nov./ HOLOTYPE ♂; R. Cammaerts det.,/ 1994/ *Neurogomphus*/ *dissimilis* sp. nov./ ALLOTYPE [sic] ♂.

The holotype was initially selected as the allotype; a female in NMBZ bears a holotype designation by Cammaerts from 1973 and an allotype designation from 1997.

guyi (*Gomphidia*) Pinhey, 1967: 12. — 10025; *Cini[to]gomphus dundoensis guyi* Pinhey; HOLOTYPE ♂/ *Gomphidia*/ *guyi* Pinhey/ May 1967; 15mls N. of/ Maun/ BOTSWANA/ 9-II-1967/ Nat.Mus.bulawayo.

Placed as a subspecies under *Cinitogomphus dundoensis* (Pinhey, 1961) by Pinhey (1976: 553), although probably not more than a variety. Lieftinck (1969: 9) returned this species to *Ictinogomphus* Cowley, 1934 and it should remain there, as Pinhey's (1970c) arguments to retain *Cinitogomphus* Pinhey, 1964 are not convincing for me.

kitchingmani (*Onychogomphus*) Pinhey, 1961b: 265. — 10518; *Onychogomphus kitchingmani*/ Pinhey ♂; HOLOTYPE ♂/ *Onychogomphus/ kitchingmani*/ Pinh. 1959; MWINILUNGA./ V-57/ N. RHODESIA; Nat. Museum/ S. Rhodesia.

The taxonomy of *Onychogomphus* Selys, 1854 is problematic because the species are poorly known, but also because the genus is not well defined. This latter problem stretches out across over 50 species in Eurasia and Africa. Within Africa most species placed in *Onychogomphus* belong to the *supinus*-group; the remaining taxa closely resemble *Tragomorphus* (see *T. mamfei*). Males are characterised by elongate dorsal processes at midlength of the male epiproct (Figs 4c, f). Females possess processes on the postgenae and H-shaped ridges on the S9 sternite, just posterior of the vulvar scale. The problem of the *supinus*-group lies in the variety of taxa described on the basis of markings, but the small differences between them in male appendages (e.g. Figs 4b, c, e, f) and S8-9 foliations. The palest individuals (such as those assigned to *O. kitchingmani* and typical *O. supinus* Hagen in Selys, 1854) have an all-pale face, pale or pale-streaked tibiae, and a pale stripe over each humeral suture that splits each humeral stripe into two separate black stripes. The abdominal markings are relatively contrasting and regular, with the pale marking on S7 quite similar to that on other segments. S8-10 are black marked contrastingly with yellow laterally and dorsally. The S8-9 foliations are relatively narrow. The darkest individuals (e.g. *O. styx*; see *O. quirrkii*) have a partly or completely dark face (Figs 4a, e), all-black tibiae, broad and continuous humeral stripes, and reduced pale thoracic markings (e.g. antehumeral stripes are often absent). The abdomen is very dark, with the pale marking on S7 well-developed and standing out against the mainly black S1-6 and rather uniformly red-brown S8-10. The S8-9 foliations are relatively broad. Regional sympatry of dark and pale individuals, such as dark *O. seydeli* (see *O. quirrkii*) and pale *O. kitchingmani* in NW Zambia, suggests that more than one species occurs within the group, but aside from some obvious synonymies (see *O. quirrkii*) their taxonomy is completely unresolved. The structure of the female head may provide more valuable information than male characters (Pinhey 1969b; own observations).

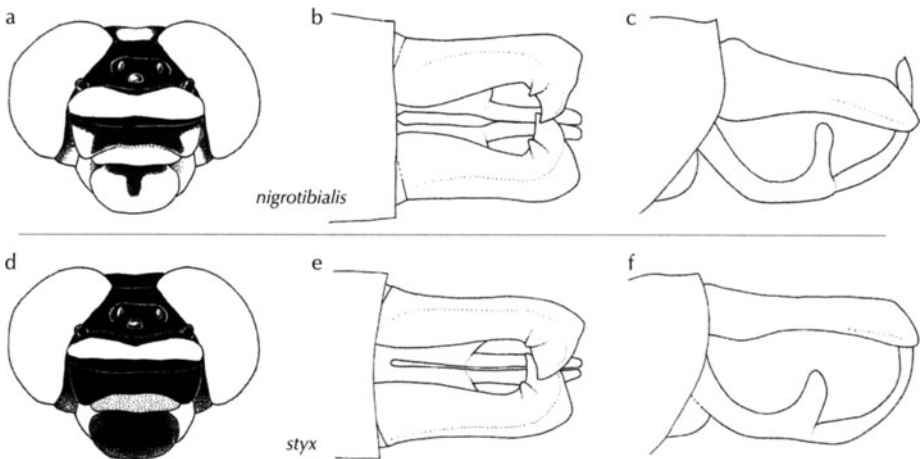


Figure 4: *Onychogomphus* males — [a-c] *O. nigrotibialis* – (a) head in rostral view, (b) appendages in dorsal view, (c) same, lateral; [d-f] *O. styx* – (d) head in rostral view; (e) appendages in dorsal views, (f) same, lateral.

mamfei (*Tragomomphus*) Pinhey, 1961b: 265. — 10215; *Tragomomphus mamfei* Pinhey/ ♂; HOLOTYPE ♂/ *Tragomomphus/ mamfei/* Pinh. 1959; Gorilla Mou[n]tain/ MAMFE/ BRITISH CAMEROONS/ [crossed out: S. Rhodesia]/ II 1959/ Nat. Museum/ S. Rhodesia.

Of the species assigned to *Tragomomphus* Sjöstedt, 1900 only *T. ellioti* Legrand, 2002 is close to the type species *T. aurivillii* Sjöstedt, 1900. The remainder are close to the disused genus *Libyomomphus* Fraser, 1926 (type species *L. tenaculatus* Fraser, 1926) (synonymy by Pinhey 1962c) by the following male characters:

- (1) labrum at most with two rather indistinct pale spots, rather than with a contrasting (sometimes broken) pale bar across its anterior half;
- (2) vertex ridged between lateral ocelli, not smooth;
- (3) occipital ridge without denticles;
- (4) synthorax laterally not largely pale, but dark with narrow or broken pale stripes;
- (5) anterior hamule with drawn-out, not short and curved, hook on a posteriorly angular, not rounded, base;
- (6) dorsal profile of cerci not sinuous, concave and angularly humped subbasally, but rather convex and barely humped;
- (7) epiproct not extending well beyond tips of cerci.

Cornigomphus Martin, 1907 (type species *C. guineensis* Martin, 1907) agrees by characters 1, 4 and 5, but others were or could not (S6-10 lost) be compared in MNMS. '*Libyomomphus*' also includes *T. christinae* Legrand, 1992 and *T. mamfei*. Pinhey (1961b) noted that *T. mamfei* "has a remarkable superficial resemblance to a Uganda species of Gomphid, now under publication as an aberrant *Onychogomphus*". This *O. bwambae* Pinhey, 1961 may indeed belong to the complex also, as could *O. emiliae* Legrand, 1992. The species differ only subtly in relative features of size, markings, dorsal profile of S10 and appendages. The *T. mamfei* holotype is rather teneral and belongs to a small species (Hw 24.7 mm), which has also recently been collected in SW Cameroon (G.S. Vick in litt.). All species currently classified in *Tragomomphus* must be revised, including the possible distinction of additional genera in the complex (*Cornigomphus*, *Libyomomphus*).

mozambicensis (*Microgomphus*) Pinhey, 1959: 340. — 10195; *Microgomphus mozambicensis* Pinhey/ Eye grey-blue, pale markings light green ♀; HOLOTYPE ♀/ *Microgomphus/ mozambicensis/* Pinh. 1959.; Chirendza-Nyamadzi R./ Mt. Selinda S.R./ Oct. 1953/ E. Pinhey.

The genus *Microgomphus* is easily overlooked and is probably more common and widespread than the sparse records suggest (Clausnitzer 2003a), as shown by the find of an exuvia in well-researched KwaZulu-Natal (Martens & Suhling 2005). Male appendages are the main feature to separate species, as differences in markings, secondary genitalia and female structures appear negligible. Unfortunately, adult males are scarce in collections and often teneral. Of seven available names for African taxa, only those introduced as third, sixth and seventh have a male holotype complete with appendages. By illustrated details, the female holotype of *M. bivittatus* Pinhey (1961c: 81. Dundo, Angola; MDLA) clearly belongs in *Lestinogomphus* Martin, 1911 [new combination]. Revision of *Lestinogomphus* must reveal whether *L. bivittatus* is the female of a known species. The perspective for resolving *Microgomphus* taxonomy is poor, and although Pinhey (1963b) and Gambles (1968) mainly had geographic grounds to associate males with two female holotypes (see

below), these must be assumed to be correct, simply because otherwise no taxonomic headway can be made. There are three allopatric types by male appendages:

1. *M. camerunensis* Longfield (1951: 98. Kumba, Cameroon; BMNH) as defined by Gambles's (1968) association of Nigerian males (Fig. 5a). These match a male from Ankasa, Ghana (xii 1993, J. Kjeerandsen, RMNH). Geographically *Gomphus zebra* Martin (1912: 485. Cameroon; MNHN) – formerly placed in *Africogomphus* Fraser, 1936 – may be conspecific: it was found to be a *Microgomphus* male without appendages by Legrand (1993). Careful comparison with *M. camerunensis* is required, as the name *M. zebra* has priority if the two are the same.
2. *M. jannyae* Legrand (1992: 187. Mt Nimba, Guinea; MNHN) was redescribed by Legrand (2003) and appears intermediate between both other types (Fig. 5b). A male from Toukoto, Mali (26 x 1978, C. Dejoux, NMBZ) matches it.
3. *M. nyassicus* (Grünberg, 1902: 234 in *Notogomphus*. Langenburg, Tanzania; ZMHB) as defined by Pinhey's (1963b) association of the *M. witchwoodensis* male. Males from the Shimba Hills, Kenya (03 iv 2002, V. Clausnitzer, RMNH) and the E Usambara Mts, Tanzania (03 v 2002, V. Clausnitzer, RMNH) agree (Fig. 5c). The female holotype of *mozambicensis* was collected in E Zimbabwe, closer to the *witchwoodensis* type locality than to Mt Gorongosa in Mozambique, where the associated male was caught. The *mozambicensis* pair was coupled because of their paler coloration, which results from their teneral condition. Black markings, especially on the face, seem to extend and deepen with age. The *nyassicus* holotype has an all-green face; one of the distinguishing features of *mozambicensis* (Pinhey 1961c; 1984), while *witchwoodensis* ('*nyassicus*') is black-faced. The '*mozambicensis*' male only retains the left cercus. Even if the appendages were once more intact, Pinhey's (1959) illustration must be a reconstruction. The thick-ended cercal branch is unlike this illustration, but typical of so-called *nyassicus*, and there are no grounds to keep *mozambicensis* apart [new synonymy]. Pinhey's (1984) listing of *M. nyassicus* from Lubumbashi in Katanga, S Congo-Kinshasa, may be

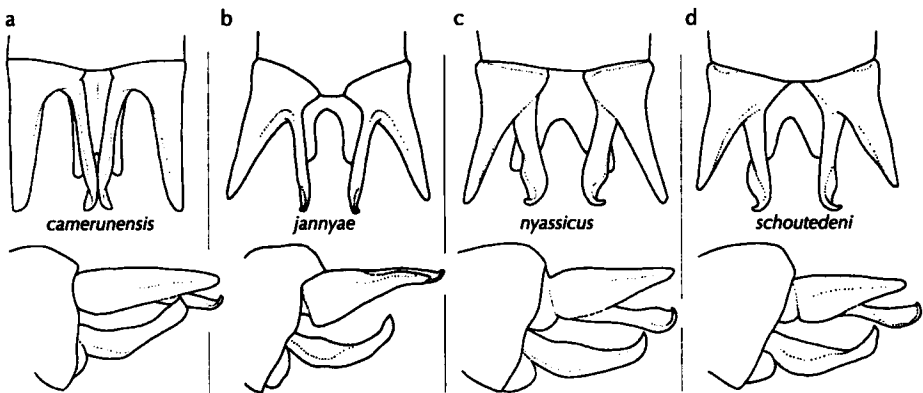


Figure 5: *Microgomphus* male appendages in dorsal (above) and lateral views (below) — (a) *M. camerunensis*, Nigeria; (b) *M. jannyae* holotype, after Legrand (1992, 2003); (c) *M. nyassicus*, Kenya; (d) *M. schoutedeni* holotype.

based on a male in NMBZ (x 1949, Ch. Seydel) and another from there in BMNH, identified as *M. schoutedeni*. A third male from this area was not identified to species by Lieftinck (1969). The holotype of *M. schoutedeni* Fraser (1949: 114; Kapanga, Congo-Kinshasa; MRAC) is also from Katanga and is like *M. nyassicus*, but with sleeker cercal branches in dorsal view (Fig. 5d). Even sleeker branches are shown by the lectotype and paratype male of *M. schoutedeni corbeti* Pinhey (1961d: 67. Sezibwa Falls, Uganda; BMNH – designation omitted by Kimmins [1969]), although Pinhey's (1961d) drawing is exaggerated. Fraser (1949) was unaware of other African *Microgomphus* species when he described *M. schoutedeni* and although it, including *corbeti*, appear synonymous with *M. nyassicus*, I hesitate to consolidate this without further study.

pinheyi (*Neurogomphus*) Cammaerts, 1968: 101. — 10310; *Neurogomphus pinheyi* Cammaerts/ ♂; HOLOTYPUS [printed]; Broderick Falls Esc./ Kenya/ May 1951/ T.H.E. Jackson; Det. E.C.G. Pinhey/ *Neurogomphus/ chapini/* Klots ♂; R. Cammaerts det., 1967/ *Neurogomphus/ pinheyi n. sp./* holotype.

quirkii (*Onychogomphus*) Pinhey, 1964a: 110. — 10527; *Onychogomphus quirkii* Pinhey/ ♂; Holotype ♂/ *Onychogomphus/ quirkii/* Pinhey 1963; Zambezi Rapids/ MWINILUNGA/ N. Rhodesia/ 4-V-1963/ Nat. Museum, S.R.

Belongs to the problematic *supinus*-group of *Onychogomphus*; see *O. kitchingmani*. Both *Tragomomphus seydeli* Schouteden (1934: 64. Lubumbashi, Congo-Kinshasa; MRAC) and *O. septemflavum* Fraser (1955: 18. PN Upemba, Congo-Kinshasa; MRAC) are known only from single females from Katanga, close to the *O. quirkii* type locality. The structure of their postgenal processes and S9 sternite is identical, as are their markings. Each process is uniquely drawn-out into an in- and up-curved tooth, exactly as in the allotype female of *O. quirkii* (identical collection data as holotype) illustrated by Pinhey (1969b): I treat *O. septemflavum* and *O. quirkii* as junior synonyms of *O. seydeli* [new synonymy; new combination]. Differences with the male of *O. styx* Pinhey, 1961 seem marginal, but the postgenal processes of a teneral female from the type locality Semliki NP (=Bwamba Forest) in W Uganda (07 vi 2003, K.-D.B. Dijkstra, RMNH) appear sufficiently distinct to maintain it as a separate species.

rossii (*Onychogomphus*) Pinhey, 1966a: 3. — 10523; *Onychogomphus rossii* Pinhey/ ♂; Holotype [no other text]; Cucho, ANGOLA/ within 100 Km./ radius (North)/ [crossed out: Oct.] Nov.1951/ Padre Eduardo; Det. E.C.G. Pinhey/ *Onychogomphus/* ♂ sp. nov.; [faint, possibly: nr.] *supinus*.

Known only from the holotype, which is the palest Afrotropical *Onychogomphus* specimen known; see *O. kitchingmani*. The thorax is almost completely pale: black lines framing the pale postdorsal stripes are the only clear markings. The abdomen has a broad dorsal yellow line that is continuous up to S10, which is flanked by uninterrupted black lines. The S8-9 foliations are very narrow and all-pale. *O. kitchingmani* is most similar, but has some dark lines of the thorax sides, more irregular and interrupted yellow and black abdominal markings, and narrow but black-bordered foliations. Pinhey (1966a) illustrated both cerci with a prominent spine on their tip, although that on the right cercus was drawn smaller. That cercus is, however, distorted and the spine may be absent. If the apical cercal spines are not aberrant, this would easily diagnose this species.

witchwoodensis (*Microgomphus*) Pinhey, 1961c: 82. — 10199; *Microgomphus witchwoodensis* Pinhey/ ♂/ eye pale blue;/ other markings/ yellow-green; HOLOTYPE ♂/ *Microgomphus/ witchwoodensis/* Pinhey 1961.; Witchwood Val./ Vumba Mts./ Umtali/ S. Rhodesia/ 2/3-I-1960/ Nat. Museum, S.R.

Junior synonym of *M. nyassicus*; see *M. mozambicensis*.

zambeziensis (*Paragomphus*) Pinhey, 1961b: 266. — 11015; *Paragomphus zambeziensis* Pinhey/ ♂; HOLOTYPE ♂/ *Paragomphus/ zambeziensis/* Pinh. 1959.; CHIRUNDU BRIDGE/ S. RHODESIA/ I - 1958/ Nat. Museum/ S. Rhodesia.

Figures 3e-h are based on a series of six males (and three females) from the type locality (ix 1965, E. Pinhey, NMBZ). A male from the Corniche in Bangui, Central African Republic (24 iv 1973, R.P. Lindley, NMBZ) is much darker but structurally identical. With its fine-tipped diverging cerci, large S8-9 foliations and bow-shaped anterior hamule *P. zambeziensis* belongs to the distinctive *fritillarius*-group of *Paragomphus* (Figs 3i-l). The flanges bordering the genital fossa are another feature of this group, which bear 14-16 teeth in *P. zambeziensis* (Fig. 3h) and 4-10 in *P. acuminatus* Fraser, 1949 (Fig. 3l). Because of their similar appendages, Pinhey (1966b: 293) made *P. acuminatus* and *P. sabicus* Pinhey, 1950 subspecies of the Madagascan *P. fritillarius* (Selys, 1892). Pinhey (1984: 26) listed them as separate species but stated that “both may eventually prove to be subspecies”. The three continental taxa are distinct in coloration and secondary genitalia and are good species. *P. sabicus* is similar to *P. fritillarius* but examination of the lectotype of the latter (ISNB — designation unknown) has shown they differ substantially, most clearly in thoracic markings and the shape of the posterior hamules and S8-9 foliations.

The scarceness and distribution of *P. zambeziensis* may result from the species's confinement to large rivers, such as the Zambezi and Ubangi. The same applies to *P. acuminatus*, which was described from Eala in Congo-Kinshasa; another male was collected at nearby Bamanya (10 x 1966, P. Hulstaert, MRAC). Le Roi (1915) reported it as *P. atratus* from adjacent Congo-Brazzaville (examined in ZMUH). Males from Basoko (26 ii 1939, Bremner, NMBZ) and Lokutu (07 xi 2004, K.-D.B. Dijkstra, RMNH) are from directly opposite banks of the Congo River, from which I have seen the species emerge. All verified sites are along large rivers in the Congo Basin and therefore Pinhey's (1984) specimens from the Limpopo River on the Zimbabwe-Mozambique border are suspect: they pertain to *P. sabicus* (NMBZ). All previous records were between the Limpopo and Zambezi Rivers, but *P. sabicus* has been found in Kenya, Malawi and Tanzania, even along seasonal streams (V. Clausnitzer, K.-D.B. Dijkstra unpubl.), as well as Namibia (Martens et al. 2003) and Tshani in Swaziland (1980, H.C. Percy, NMBZ).

zambeziensis (*Neurogomphus*) Cammaerts, 2004: 136. — 10286; *Neurogomphus uelensis* Schout./ ♂; Holotype ♂/ *Neurogomphus/ zambeziensis/* Cammaerts, 19?4; Katambora-Zambezi R./ ZAMBIA/ 2-II-1965/ Nat. Museum/ S. Rhodesia; R. Cammaerts det., 1974/ *Neurogomphus/ zambeziensis* sp.nov./ ex. no 1 = HOLOTYPE.

MACROMIIDAE

paludosa (*Macromia*) Pinhey, 1976: 565. — 9338; *Macromia paludosa* Pinhey/ ♂; Holotype ♂/ *Macromia/ paludosa/* Pinhey, 1976; Shakawe/ W. Okavango/ BOTSWANA/ 26-III-1974/ Nat.Mus.Bulawayo/ Pinhey - F. de Moor. Transferred to *Phyllomacromia* Selys, 1878; the synonymy with *P. overlaeti* (Schouteden, 1934) found by Dijkstra (2005a: 19) is confirmed.

LIBELLULIDAE

aenea (*Trithemis*) Pinhey, 1961b: 270. — 17345; *Trithemis aenea* Pinhey/ ♂; HOLOTYPE ♂/ *Trithemis/ aenea/* Pinh 1959; BUTA/ N. BELGIAN CONGO/ II - 1958/ Nat. Museum/ S. Rhodesia.

Not recognised by Schouteden or Fraser, although numerous specimens from throughout Congo-Kinshasa are present in MRAC among even larger numbers identified (mostly correctly) as *T. nuptialis* Karsch, 1894. Despite its similar size and build, *T. aenea* males differ clearly by the bronzy frons, warm brown thorax without black markings, double pale-striped abdomen, bare hind femora and usually smoky wing-tips. The species must be common throughout the basin and, judging from males found from Bunia, Lubumbashi and Mahagi-Port, should also occur in Uganda and Zambia. It extends to Nigeria, but an examined male from Bissau (13 i 2002, C.R. Barlow, coll. M.J. Parr) constitutes the only record further west.

[*aurantiaca* (form *Trithemis kirbyi ardens*) Pinhey, 1970a: 78. — 16602; *Trithemis kirbyi ardens* (Gerst.)/ ♀ f. *aurantiaca* Pinhey; Holotype ♀/ *Trithemis/ kirbyi ardens/* ♀ f. *aurantiaca/* Pinhey 1968; Vom (in garden)/ N. NIGERIA/ 4-X-1961/ Nat. Museum/ S. Rhodesia/ AS.40.(Gambles); Det. E.C.G. Pinhey, 1966/ *Trithemis kirbyi ardens* Gerst./ andromorphic ♀/ (normal f. Nigeria).] Andromorphic female of *T. kirbyi* Selys, 1891.

atritibiae (*Zygonyx*) Pinhey, 1964a: 120. — 18297; *Zygonyx atritibiae* Pinhey/ ♂; Holotype ♂/ *Zygonyx/ atritibiae/* Pinhey 1963; Nseloki River/ Mwinilunga/ N.Rhodesia/ IV - 1963/ Nat.Mus.S.R.

Replaces *Z. regisalberti* (Schouteden, 1934) of central Africa in N Zambia and adjacent S Katanga. It is smaller on average, has black rather than brown tibiae, S3 bears a broad basal ring like that on S4 and the female wing markings are much reduced.

bifida (*Trithemis*) Pinhey, 1970a: 136. — 17727; *Trithemis bifida* Pinhey/ ♂; Holotype ♂/ *Trithemis/ bifida/* Pinhey 1968; MWINILUNGA/ N. Rhodesia/ II 1960/ Nat. Museum, S.R.

Pinhey (1970a) diagnosed the *basitincta*-group of *Trithemis* by the combination of the sickle-shaped hamules and the genital lobes that are directed away from the hamules, i.e. not curving forward to stand parallel to them (Figs 6a-j). All species are slender and dark, sometimes with bluish pruinosity. The group would have been named more aptly after *T. donaldsoni* (Calvert, 1899), as this was the first species described and most additional species were initially mistaken with it or introduced

as subspecies of it. Fraser (1953) informally spoke of a *donaldsoni-basitincta-africana* group, but Pinhey (1970a) separated the *africana*-group for two large taxa (*africana* [Brauer, 1890], *tropicana* Fraser, 1953) with a brown basal fifth of the Hw and dense venation: usually $16\frac{1}{2}$ – $18\frac{1}{2}$ Fw Ax and six to nine rows of cells between the anal loop and tornus, rather than $10\frac{1}{2}$ – $15\frac{1}{2}$ (occasional exceptions, see below) and three to four. However, they should be included in the *basitincta*-group, because of their secondary genitalia (Figs 6i, j).

After the description of *T. basitincta* Ris, 1912 (initially a subspecies of *T. donaldsoni*) numerous records under that name followed (e.g. Nielsen 1934; Fraser 1951; Pinhey 1951). Pinhey (1961d) first recognised their variability, but “after examining large numbers” of so-called *T. basitincta* had “reluctantly come to the conclusion that this is a very variable species” and he thus described four or five species under that name, illustrating the secondary genitalia of three. Almost simultaneously Lieftinck (1969) and Pinhey (1970a) realised that two similar species were among their ‘*basitincta*’ material. Each named the commoner one after the bulbous anterior lamina, *T. aconita* and *T. caruncula* respectively. The second species was named *T. congolica* by Pinhey and only discussed by Lieftinck, who was unsure of its relation to *T. basitincta* but remarked that “it is hardly possible to associate this unnamed species with the type of *basitincta*, the male of which [...] possesses a much lower and more deeply emarginated anterior lamina”. Pinhey (1970a, 1978) treated a third species, with an entire lamina, as the true *T. basitincta* and described a fourth as *T. bifida*, naming it so for its allegedly distinctive bifid lamina. Clausnitzer (2001) discussed *T. bifida*, but did not mention Lempert’s (1988) reiteration of the bifid lamina of the *T. basitincta* holotype, which implied a close similarity of the two and an error in Pinhey’s interpretation of *T. basitincta*.

The *basitincta*-group consists of several pairs of taxa, each defined by the shape of the anterior lamina and hamules (Figs 6a–j), as well as the penis (not discussed further here). These pairs are *donaldsoni* with *dejouxi* (see *T. dejouxi*), *aconita* with *congolica* (see *T. congolica*), *basitincta* with *bifida* (see below), and *africana* with *tropicana*. The taxa within the pairs are similar morphologically, differing mainly in wing markings (Figs 6o–t). As the observed differences are stable and some sister-taxa are (probably) sympatric, all recognised taxa are best regarded as good species (see *T. dejouxi*). The specific status of *T. tropicana* that occurs from S Nigeria to the Congo Basin and has the brown Hw patch extending distad on the posterior wing border, must therefore be reinstated. Pinhey (1970a) treated it as a subspecies of *T. africana*, which has the patch constricted proximad and occurs from Sierra Leone to Côte d’Ivoire.

In caudo-ventral view, both *T. bifida* and *T. basitincta* have an almost parallel-sided anterior lamina, with a wide notch in its broad apex that is flanked by dark and rounded peaks (Fig. 6n). Their hamules are very slender and sabre-like (Figs 6f, g) and venation is comparatively dense ($13\frac{1}{2}$ – $15\frac{1}{2}$ Fw Ax, rarely $12\frac{1}{2}$ – $16\frac{1}{2}$). *T. basitincta* has a sharp blackish triangular patch at the Hw base (Fig. 6s) and short bristles at the base of anterior lamina (Fig. 6g), while *T. bifida* has faint brown on the Hw (Fig. 6r) and long hairs on the lamina (Fig. 6f). *T. bifida* is known from the type locality in NW Zambia and Upemba NP in adjacent Katanga (ISNB, MRAC). Clausnitzer (2001) found it in the Shimba Hills of S Kenya and examined a similar specimen without the abdomen from Turiani in NE Tanzania (NMKE). The latter is probably the male in Pinhey’s (1961d) figure 11.23, which matches *T. bifida*. Lem-

pert's (1988) Liberian specimens were conspecific with the *T. basitincta* holotype from Cameroon. These records suggested the species' allopatry, but in SE Ghana a male of *T. bifida* was collected at Fume (10 vii 2006, K.-D.B. Dijkstra, RMNH) only 30 km from two males of *T. basitincta* at the Wli Falls (09-12 iii 1993, H.A. Olsvik, coll. H.A. Olsvik). Moreover, MNHN has two males of *T. bifida* from Dindefello near Kedougou in SE Senegal (03 v 1981, J. Legrand & B. Sigwalt). Thus *T. bifida* reported from Côte d'Ivoire by Pinhey (1978) could be either species.

Pinhey (1970a) described and illustrated as *T. basitincta* a species with a notably short genital lobe and an anteriorly deeply furrowed anterior lamina with an undivided apex bearing a clump of hairs (Fig. 6h). The male's Hw markings are distinctive by the contrast between the blackish subcostal and cubital streaks and the clear median and anal spaces (Fig. 6t). The species approaches *T. africana* and *T. tropicana* in its large size (male Hw 33-35 mm) and dense venation ($14\frac{1}{2}$ - $18\frac{1}{2}$ Fw Ax). Pinhey (1970a) reported it from near Kampala and Bwamba (= Semliki) Forest in Uganda and the Ituri Forest in Congo-Kinshasa. Specimens from W Tanzania (RMNH) listed by Pinhey & Pinhey (1984) as *T. bifida* and from Budongo Forest in Uganda (coll. P. Miller) as "species near *congolica*" by Miller (1993) are also this species, which recognising the true nature of *T. basitincta* is unnamed (see Part 2).

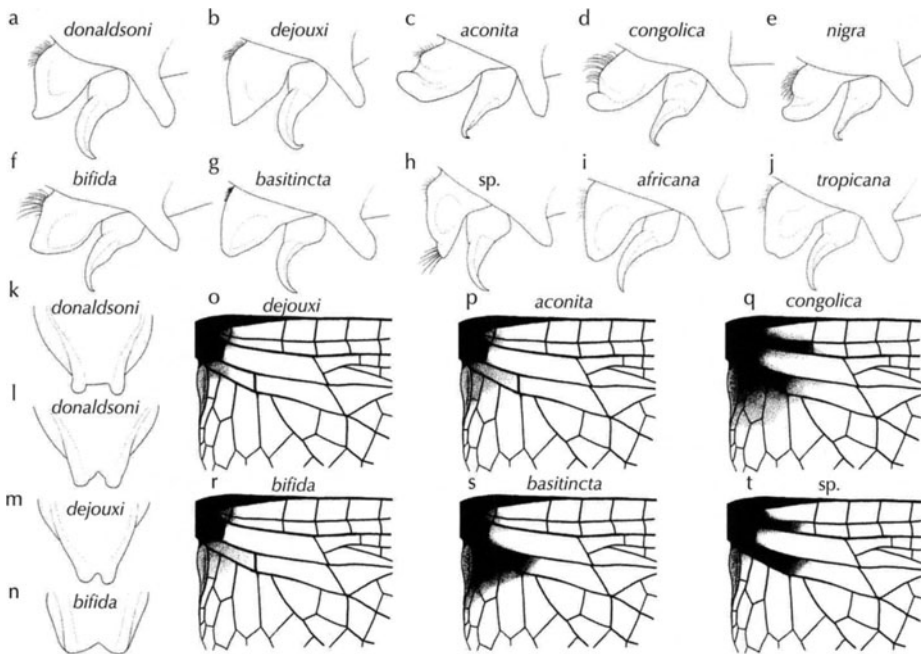


Figure 6: *Trithemis* males — [a-j] secondary genitalia in lateral view — (a) *T. donaldsoni*; (b) *T. dejouxi*; (c) *T. aconita*; (d) *T. congolica*; (e) *T. nigra*; (f) *T. bifida*; (g) *T. basitincta*; (h) *T. sp.* (*basitincta* sensu Pinhey 1970a); (i) *T. africana*; (j) *T. tropicana*; — [k-n] secondary genitalia in caudo-ventral view — (k-l) *T. donaldsoni*, two variations; (m) *T. dejouxi*; (n) *T. bifida*; — [o-t] Hw base — (o) *T. dejouxi*; (p) *T. aconita*; (q) *T. congolica*; (r) *T. bifida*; (s) *T. basitincta*; (t) *Trithemis* sp. (*basitincta* sensu Pinhey 1970a).

bipunctus (*Porpax*) Pinhey, 1966c: 49. — 14371; *Porpax bipunctus* Pinhey/ ♂; Holotype ♂/ *Porpax bipunctus*/ Pinhey 1963; MAMFE/ BRITISH CAMEROONS/ II - 1958/ Nat. Museum/ S. Rhodesia.

Dijkstra (2006b) provided a redescription and new records.

brevistigma (*Crocothemis*) Pinhey, 1961a: 80. — 15002; *Crocothemis brevistigma* Pinhey/ ♂; HOLOTYPE ♂/ *Crocothemis/ brevistigma*/ Pinh. 1960; IKELENGE/ MWINILUNGA/ N. Rhodesia/ II 1960/ Nat. Museum, S.R.

A rare species known so far only from N Zambia along the border with Congo-Kinshasa. Care must be taken to separate it from *C. sanguinolenta*, which is among the most common African odonates. In *brevistigma* males the yellow in Fw extends to arculus and in Hw includes the triangle [usually less but sometimes identical in *sanguinolenta*], the abdomen is more slender and cylindrical [not broad and flattened] and the Pt is never over 2.5 mm [often so], while the tip of the vulvar scale reaches to the end of S9 [well beyond it or even beyond S10 in *sanguinolenta*]. Comparison with series of specimens is needed to separate males, and female material is therefore desirable.

brydeni (*Trithemis*) Pinhey, 1970a: 147. — 18102; *Trithemis brydeni* Pinhey/ ♂; Holotype ♂/ *Trithemis brydeni*/ Pinhey, 1969; Msamfu, Kasama/ Zambia/ 11-III-1969/ Nat. Museum Bulawayo/ leg. E. Pinhey.

Confined to swamps in N Botswana and NE Zambia, peculiar for its triangular anterior lamina with pale and bifid apex, short genital lobes and the *Diplacodes*-like pale triangular dashes up to S8 in females and immature males.

caruncula (*Trithemis*) Pinhey, 1970a: 141. — 17669; *Trithemis caruncula* Pinhey/ ♂; Holotype ♂/ *Trithemis/ caruncula*/ Pinhey 1968; Vict. Falls/ N. RHODESIA/ II-57/ Nat. Mus./ S. Rhodesia.

Junior synonym of *T. aconita* Lieftinck, 1969 (Pinhey 1971b: 229); see *T. congolica* for the characters of this species and *T. bifida* for the taxonomy of the *basitincta*-group.

cinctifrons (ssp. *Orthetrum icteromelan* [sic]) Pinhey, 1970b: 302. — 12989; *Orthetrum icteromelas cinctifrons*/ Pinhey ♂; Holotype ♂/ *Orthetrum icteromelas/ ssp. cinctifrons*/ Pinhey, 1969; Salisbury [crossed out: Expt. Stn./ Light Trap]/ Oct. 1956.

Continental subspecies of *O. icteromelas* Ris, 1910. The black markings at the base of the frons are less developed than in nominotypic specimens from Madagascar, but those on the frontal shields are more extensive, strengthening the 'spectacled' appearance.

congolica (*Trithemis*) Pinhey, 1970a: 144. — 17666; *Trithemis congolica* Pinhey/ ♂; Holotype ♂/ *Trithemis/ congolica*/ Pinhey 1968; Eala, Belgian/ Congo. I. 35.; *T. basitincta*/ Ris/ det. F.C.Fraser.

Both this species and *T. aconita* have a pale apex of the anterior lamina that is swollen and turned forward, while their hamules are rather straight with an abruptly curved point (Figs 6c, d). *T. aconita* males have an average Hw length of 29.5 mm (range 27-31; $n = 32$) and usually $11\frac{1}{2}$ - $12\frac{1}{2}$ Fw Ax (range $9\frac{1}{2}$ - $14\frac{1}{2}$) with a small brown Hw patch that is most prominent in the cubital space, extending at most to Cux (Fig. 6p). *T. congolica* has a Hw of 32.2 mm (31-33; $n = 13$), $13\frac{1}{2}$ Fw Ax ($11\frac{1}{2}$ - $16\frac{1}{2}$) and a large Hw patch that fills the subcostal space to Ax1 and the cubital space

beyond Cux, resulting in double-pointed marking (Fig. 6q). Females have bolder wing markings than males and thus appear more different, but females are generally poorly known in the group. *T. aconita* ranges almost throughout tropical Africa, but is replaced in the Congo Basin by *T. congolica*. The endemic *T. nigra* Longfield, 1936 of Principe in the Gulf of Guinea is close by secondary genitalia (Fig. 6e). However, the thorax is deep black spotted boldly with yellow and does not appear to darken or become pruinose, while the frons is blue metallic, not purple. The Hw base is only very faintly yellow. The species is small (Hw 25.0-27.5) and there are not four, but three, rows of cells between the anal loop and tornus.

***dejouxi* (ssp. *Trithemis donaldsoni*)** Pinhey, 1978: 6. — 17614; *Trithemis donaldsoni* *dejouxi* Pinhey/ leg R. Lindley; Holotype ♂/ *Trithemis donaldsoni*/ *dejouxi* Pinhey, 1977; Ouham River/ Bohira/ BOUAR/ Centr. Afr. Rep./ 22-XII-1974/ Nat. Museum/ S. Rhodesia/ R. Lindley.

Raised to species level by O'Neill & Paulson (2001: 77) because of its yellowish wings, the entirely black underside of the abdomen and slight differences in the secondary genitalia. *T. dejouxi* and *T. donaldsoni* have relatively broad sickle-like hamules (Figs 6a, b) and more open venation than other *basitincta*-group species (10½-12½ Fw Ax, rarely 13½; see *T. bifida*). In caudo-ventral view, both species have a tapering anterior lamina, with a narrow notch in its pointed apex that is flanked by pale and often knob-like peaks (Figs 6k-m). These apical knobs tend to be more developed in *T. donaldsoni*, often leaning forward and with a more pronounced notch between them, which can be square-bottomed as shown by Clausnitzer (2001), U-shaped as described by O'Neill & Paulson (2001) or V-shaped like *T. dejouxi* (Figs 6k-m). *T. dejouxi* has a yellow wash across the Hw and a small but distinct brown patch in the Hw cubital space (Fig. 6o), while *T. donaldsoni* has all clear wings. *T. donaldsoni* differs from other *basitincta*-group species, including *T. dejouxi*, by the broader abdomen with S3 scarcely narrowed apically. *T. donaldsoni* ranges from the type locality in E Ethiopia through eastern Africa to NE South Africa. *T. dejouxi* appears to be allopatric, although it is known from Lake Langano in C Ethiopia (11 xi 1973, C. Consiglio, NMBZ) and Yemen (H.J. Dumont in litt.; *T. donaldsoni* in Dumont & Al-Safadi 1991). *T. dejouxi* also occurs in Benin (RMNH), Central African Republic (NMBZ), Côte d'Ivoire (NMBZ), Ghana (BMNH, RMNH), Guinea (MNH), Liberia (coll. J. Lempert), Mali (MRAC), Nigeria (BMNH) and Sudan (ISNB).

***ennediensis* (ssp. *Trithemis arteriosa*)** Pinhey, 1970a: 66. — 16753; *Trithemis arteriosa* *ennediensis*/ Pinhey/ ♂; Holotype ♂/ *Trithemis arteriosa* (Burm.)/ ssp. *ennediensis* Pinhey/ (1968); Ennedi Mts/ Centr. Afr. Rep./ 15-VIII-1957/ Nat. Museum/ S. Rhodesia/ leg. Dr. F. Kollmannsperger; *T. arteriosa*/ (Burm.)/ det. Dr. K. Buchholz 1958.

Pale variety of *T. arteriosa* (Burmeister, 1839).

***falconis* (*Trithemis*)** Pinhey, 1970a: 113. — 17833; *Trithemis falconis* Pinhey/ ♂; Holotype ♂/ *Trithemis*/ *falconis*/ Pinhey, 1968; 80m N. of Maun/ Botswana/ 11-XII-1968/ Pinhey-Falc Exp/ Nat. Mus. Bulawayo; Khwaai R., 3000' 19°08 S, 23°48 E.

Lieftinck (1969: 44) described *T. aequalis* almost simultaneously from Lake Bangweulu, Zambia. Pinhey (1976: 587) did not compare holotypes, but made *T. falconis* a subspecies of *T. aequalis*, while Martens et al. (2003: 150) treated them as synonymous.

Three *T. falconis* males from the Okavango Delta in BMNH (one was collected by the Pinhey-Falcon Expedition) agree with the holotype of *T. aequalis* (RMNH), including the possession of lateral streaks on S4-7. These can also be absent, for instance in the *T. falconis* holotype, which is indeed conspecific with *T. aequalis*.

***fitzgeraldi* (*Neodythemis*)** Pinhey, 1961a: 64. — 11387; *Neodythemis fitzgeraldi*/ Pinhey/ ♂; HOLOTYPE ♂/ *Neodythemis/ fitzgeraldi*/ Pinh. 1960; ABERCORN N.R./ LUCHECHE RIVER/ III - 1957/ Nat. Museum/ S. Rhodesia.

Previously known only from NE Zambia, but a female from Lubudi in Katanga published as "*Micromacromia* (?) sp. nov." by Pinhey (1966a) pertains to a large *N. fitzgeraldi* (Hw 33.5 mm, vs 28.5 mm in topotypical female) with two rows of cells at base of discoidal field (Dijkstra & Vick 2006).

***fumosa* (*Trithemis*)** Pinhey, 1962b: 48. — 17753; *Trithemis fumosa* Pinhey/ ♂; HOLOTYPE ♂/ *Trithemis/ fumosa*/ Pinh. 1960; ETOUMBI Forest/ MAKOUA/ MOYEN CONGO/ VIII - 1960/ Nat. Museum/ S. Rhodesia.

Robust species with short, smoky wings, known only from the holotype and the allotype collected at the same site almost four years later.

***gorillae* (*Neodythemis*)** Pinhey, 1961b: 267. — 11407; *Neodythemis gorillae*/ Pinhey/ ♂; HOLOTYPE ♂/ *Neodythemis gorillae*/ Pinh. 1959.; GORILLA MTNS MAMFE/ BRITISH CAMEROONS/ II - 1958/ Nat. Museum/ S. Rhodesia.

Junior synonym of *N. afra* (Ris, 1909) (Dijkstra & Vick 2006: 56).

***grouti* (*Trithemis*)** Pinhey, 1961b: 269. — 17311; *Trithemis grouti* Pinhey/ ♂; HOLOTYPE ♂/ *Trithemis/ grouti*/ Pinh. 1959; ½way Douala Nkongsamba Rd./ FRENCH CAMEROONS/ [crossed out: S. Rhodesia]/ II 1958/ Nat. Museum/ S. Rhodesia.

After describing them in short succession, Pinhey (1970a: 105) made *T. grouti* a subspecies of *T. atra* Pinhey (1961d: 166. Masindi Port, Uganda: BMNH). However, *grouti* has priority by two months (Pinhey 1984: 49). This correction has sometimes been overlooked (e.g. Legrand 2003).

***ikomae* (*Zygonyx*)** Pinhey, 1961b: 270. — 18183; *Zygonyx ikomae* Pinhey/ ♂; HOLOTYPE ♂/ *Zygonyx/ ikomae*/ Pinh. 1959; IKOM/ EASTERN NIGERIA/ II - 1958/ Nat. Museum/ S. Rhodesia.

Listed as a junior synonym of *Z. natalensis* (Martin, 1900) by Medler (1980: 28) on the advice of R.M. Gambles. The stained specimen indeed pertains to that species.

***imitata* (ssp. *Trithemis monardi*)** Pinhey, 1961d: 164. — 16600; *Trithemis monardi imitata* Pinhey/ ♂; HOLOTYPE/ *Trithemis/ monardi/ imitata* Pinh. 1959; BUTA/ N. BELGIAN CONGO/ II - 1958/ Nat. Museum/ S. Rhodesia.

This taxon was described as a northern subspecies of *T. monardi* Ris, 1931, but raised to species level on the basis of rather relative differences in markings (Pinhey 1970a): *monardi* is darker on face and wings, although its northern 'subspecies' *insuffusa* Pinhey, 1970 is paler, narrowing the presumed gap to *imitata*. South of the Equator only *monardi* (including *insuffusa*) has been reported. Although *imitata* predominates, records are confusingly mixed north of the Equator: Del Centina et al. (1984) listed *monardi* for a locality in NE Congo-Kinshasa that lies between the type locality of *T. imitata* and Garamba NP from where Pinhey (1966c) reported extensive material of that taxon. Carfi & Terzani (1993) reported *monardi* from Ethiopia,

but their specimen is closer to *imitata* (Clausnitzer & Dijkstra 2005). D'Andrea (1997) discussed *monardi* specimens from Sierra Leone and Cameroon, although I have only seen *imitata* from W Africa. I assigned a male from Kenya's Marich Pass (coll. V. Clausnitzer) to *monardi* with doubt, while Ugandan individuals are *imitata*-like and have been found up to Tororo near the Kenyan border. The taxonomy of the two taxa must be resolved in a geographic perspective: my hypothesis is that they form a single species, which becomes darker on average towards the south.

insuffusa (ssp. *Trithemis monardi*) Pinhey, 1970a: 72. — 16586; *Trithemis monardi* insuffusa/ Pinhey/ ; Holotype / *Trithemis monardi*/ insuffusa/ Pinhey 1968; Lake Chila/ Abercorn N.R./ April 1954/ E. Pinhey.

Pale variety of *T. monardi* Ris, 1931; see *T. imitata*.

insulana [sic] (ssp. *Zygonyx torrida* [sic]) Pinhey, 1981a: 74. — 18186; *Zygonyx torrida* Kirby/ ♂/ Riv. du Rempart/ W. of Quatre Borne/ W. Mauritius/ 22/5/76/ E. Pinhey; Holotype ♂/ *Zygonyx torrida insulana*/ ssp. nov./ E. Pinhey, 1980.

Small variety of *Z. torridus* (Kirby, 1889) with faintly yellow wing bases; correct spelling is *insulanus*.

jacksoni (*Trithemis*) Pinhey, 1970a: 67. — 16508; *Trithemis jacksoni* Pinhey ♀; Holotype ♀/ *Trithemis*/ *jacksoni*/ Pinhey, 1968; Tiassale Forest/ Abidjan/ Ivory Coast/ VII - 1965/ Nat. Museum/ S. Rhodesia; 0.51/ .genit./*Trithemis*/ *jacksoni*.

The holotype differs only from typical females of *T. arteriosa* (Burmeister, 1839: 850 in *Libellula*. Natal; MLUH) by the wing tips tinged brown up to the base of the Pt. Darkened tips in females occur throughout the range of *T. arteriosa* (e.g. Congo-Kinshasa, Ghana, South Africa, United Arab Emirates) and I therefore consider *T. jacksoni* as conspecific [new synonymy]. D'Andrea (1997) discussed the taxon, but only compared it with *T. monardi*.

latihami (*Orthetrum*) Pinhey, 1966c: 40. — 12836; *Orthetrum latihami* Pinhey/ ♂; Holotype ♂/ *Orthetrum*/ *latihami*/ Pinhey 1963; Congo Belge, P.N.G./ Miss. H. De Saeger/ II/gd/4, 30-viii-1951/ Rec. H. De Saeger. 2332.

The presence of the holotype in NMBZ is contrary to Pinhey (1966c), who stated it is in the Institut des Parcs Nationaux, now incorporated in MRAC. Easily identified by hamule (Fig. 7b), but recorded rarely. I confirm the identification of specimens from Sierra Leone in NMBZ and MZUF (Pinhey 1970b; Carfi & d'Andrea 1994) and additional records from Guinea (Legrand 2003), Côte d'Ivoire (Lindley 1974), Nigeria (Medler 1980) and the Central African Republic (Pinhey 1971a) suggest this species occurs widely but scarcely in the northern savannahs of Africa.

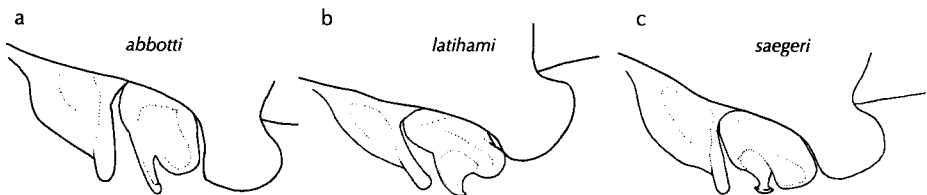


Figure 7: *Orthetrum* secondary genitalia in lateral view — (a) *O. abbotti*; (b) *O. latihami*; (c) *O. saegeri*.

longistipes (*Allor[r]hizucha*) Pinhey, 1964a: 114. — 11255; *Allor[r]hizucha longistipes* Pinhey; Holotype ♂/ *Allor[r]hizucha/ longistipes/* Pinhey 1963; LISOMBO River/ Mwinilunga/ N. Rhodesia/ 1-V-1963/ Nat.Mus.S.R.

Junior synonym of *Malgassophlebia bispina* Fraser, 1958; see *M. b. nigeriae*.

malgassicum (ssp. *Orthetrum abbotti*) Pinhey, 1970b: 285. — 12000; *Orthetrum abbotti malgassicum/* Pinhey/ ♂; Holotype ♂/ *Orthetrum abbotti/ malgassicum/* Pinhey, 1969; Lamboumakandro Forest/ TULIAR/ S.W. MADAGASCAR/ III - 1961/ Nat. Museum/ S. Rhodesia.

Madagascan subspecies of *O. abbotti* Calvert, 1892 with considerably greater size and more prominent markings on the frontal shields than the nominotypic subspecies, recalling the sympatric *O. i. icteromelas* (see *O. i. cinctifrons*).

[*melanisticta* (var. *Trithemis pluvialis*) Pinhey, 1970a: 75. — 17038; *Trithemis pluvialis* Förster/ ab. *melanisticta* Pinhey ♂; Holotype ♂/ *Trithemis/ pluvialis* Förster/ ab. *melanisticta/* Pinhey, 1969; Lisombo R./ MWINILUNGA/ ZAMBIA/ 26-I-1965/ Nat. Museum/ S. Rhodesia; Det. E.C.G Pinhey/ *Tr. pluvialis/* Forst./ *melanic* ♂.]

Dark variety of *T. pluvialis* Förster, 1906.

mwinilungae (ssp. *Zygonyx flavicosta*) Pinhey, 1961a: 90. — 18258; *Zygonyx flavicosta mwinilungae/* Pinhey; HOLOTYPE ♂/ *Zygonyx/ flavicosta/ mwinilungae/* Pinh. 1960; MWINILUNGA/ N. Rhodesia/ 2 1960/ Nat. Museum, S.R. Variety of *Z. flavicosta* (Sjöstedt, 1900) with somewhat different facial markings.

nigeriae (ssp. *Malgassophlebia bispina*) Pinhey, 1961b: 266. — 11253; *Malgassophlebia bispina nigeriae* Pinhey/ ♂; Holotype ♂/ *Malgassophlebia/ bispina nigeriae/* Pinhey; AJASSOR-IKOM/ EASTERN NIGERIA/ II - 1958/ Nat. Museum/ S. Rhodesia.

Aside from the Gabonese *M. westfalli* Legrand, 1986 and two Madagascan species (Legrand 2001), all *Malgassophlebia* taxa belong to the complex of *M. bispina* Fraser (1958: 317. Bambesa, Congo-Kinshasa; MRAC), of which *longistipes* and *nigeriae* have been treated as subspecies or species (Pinhey 1961b, 1984; Legrand 1986; Vick 1999). The description of additional taxa in this group appears to result from Fraser's (1958) poor illustration of the *M. bispina* holotype, confusion with the genus *Allorhizucha* (a synonym of *Neodythemis* Karsch, 1889; see Dijkstra & Vick 2006), and variation in markings. The cercal spine, for which *M. bispina* was named, was drawn too distally by Fraser (1958) and lies about at the appendage's midlength, as in its relatives (Fig. 8). Pinhey (1964a) described *M. longistipes* in *Allorhizucha*, but

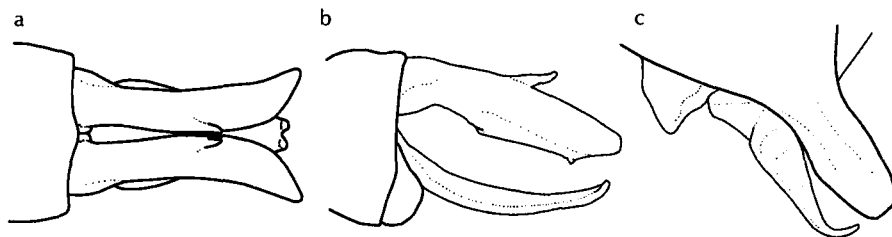


Figure 8: *Malgassophlebia bispina*, male holotype — (a) appendages in dorsal view; (b) same, lateral; (c) secondary genitalia in lateral view.

made it a subspecies of *M. bispina* (Pinhey 1984: 34), and Miller (1991, 1993) described the penis of a male from Uganda's Budongo Forest as *A. preussi* Karsch, 1891. Latter error is clear by comparison of his drawing with that by Legrand (1979) of *M. aequatoris* Legrand (1979: 4. Makokou, Gabon; MNHN). Legrand (1979) wrote: "Ce groupe [of *M. bispina*] est très homogène et les espèces sont difficilement séparables. Cependant, *M. aequatoris* présente des caractères, surtout au niveau de la coloration des taches abdominales et de leur répartition [...], qui permettent de la séparer des autres." He did not specify these differences, and neither separated the taxa in a key to *Malgassophlebia* species provided later (Legrand 1986). Comparison of the holotypes of *bispina*, *longistipes* and *nigeriae* with the detailed illustrations of *aequatoris* reveals no significant morphological differences, but the maculation is variable: *bispina* is palest with S4-9 predominantly yellow and only S10 all black, while *aequatoris* is darkest with S4-8 mostly black and S9-10 entirely so. *Longistipes* and *nigeriae* are intermediate, with the latter slightly darker. A similar gradient is seen in the extent of black on the frons. A '*nigeriae*' male from SW Cameroon (G.S. Vick, coll. G.S. Vick) is even darker than *aequatoris*. There are no differences in the configuration of the markings and all four taxa appear to be conspecific [new synonymies].

okavangoensis (*Diplacodes*) Pinhey, 1976: 579. — 15690; *Diplacodes okavangoensis*/ Pinhey/ ♂; Holotype [sic] ♂/ *Diplacodes okavangoensis*/ Pinhey, 1976; 4-River Camp/ Okavango Delta/ Botswana/ 11-XII-1973/ Nat. Museum/ S. Rhodesia/ Nat.Mus.Falc.Coll.Exp.

Junior synonym of *D. deminuta* Lieftinck, 1969 (Dijkstra 2006a: 120).

pujoli (*Nesciothemis*) Pinhey, 1971a: 13. — 11775; *Nesciothemis pujoli* Pinhey/ ♂; Holotype ♂/ *Nesciothemis pujoli* Pinhey/ 1971; Bangui/ Centr. Afr. Rep./ 8-VIII-1969/ R. PUJOL.

O'Neill & Paulson (2001) considered Ghanaian specimens as conspecific with *N. pujoli*, providing the first records since its description, although they did not examine the holotype. Their males and similar ones from Benin, Ghana and Nigeria (BMNH, RMNH) differ subtly from *N. farinosa* (Förster, 1898) in the shape of the hamule (Fig. 9) and the reduced extent of abdominal pruinosity. The central hollow of the hamular lobe is shallow and wide, being more than three times (rather than less) as wide as the ridge along its border; that ridge does not continue below the gap between the lobe and hamular hook, but is interrupted by it. Pruinosity extends at most to the basal half of S4; in *N. farinosa* at least more than half of S4 and often

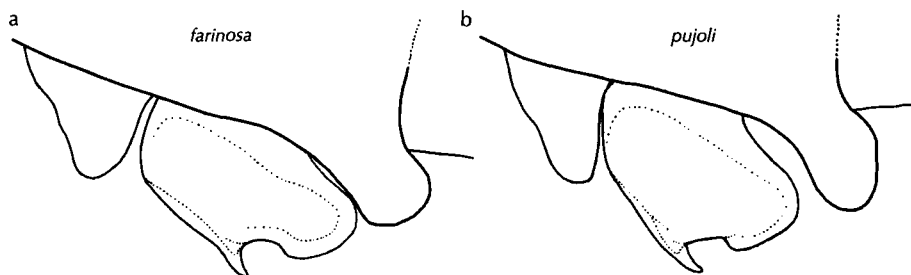


Figure 9: *Nesciothemis* secondary genitalia in lateral view — (a) *N. farinosa*; (b) *N. pujoli*.

all of S5 is pruinose. The hamule of the *N. pujoli* holotype is similar to that of a Beninese male, especially the flat lobe, but seems a little less distinct from *N. farinosa*. Its pruinosity is thin (because the specimen is young rather than stained) and is present on the abdomen only on S1-3. *N. pujoli* can be retained as the western counterpart of *N. farinosa* for now, but further study must confirm whether a species pair with representatives in Africa's respective northern and eastern savannah belts is involved, perhaps overlapping in N Uganda or Ethiopia.

***quadrigutta* (ssp. *Eleuthemis buettikoferi*)** Pinhey, 1974: 5. — 14663; *Eleuthemis quadrigutta*/ Pinhey/ ♀; Holotype ♀/ *Eleuthemis quadrigutta*/ Pinhey, 1970; Haroni River/ Melsetter/ S. Rhodesia/ XI - 1967/ Nat. Museum/ S. Rhodesia.

Known only from the holotype and a paratype female. Raised to species level by Pinhey (1984), although the large size (holotype Hw 28.5 mm) and extensively dark tips to all wings are the only distinctive features. Females of *E. buettikoferi* Ris (1910: 384. Bavia, Liberia; MNHN) most often have only the Fw dark-tipped, but a female from Sierra Leone in MZUF has all wings almost darkened as extensively as the *quadrigutta* types and Hw 28.0 mm, demonstrating a certain degree of variation in *E. buettikoferi* [new synonymy].

***rhodesiae* (*Orthetrum*)** Pinhey, 1961b: 269. — 12773; *Orthetrum rhodesiae* Pinhey/ ♂/ in Cop; HOLOTYPE ♂/ *Orthetrum/ rhodesiae*/ Pinh. 1959; KAPIRI MPOSHI/ N. RHODESIA/ I - 1958/ Nat. Museum/ S. Rhodesia.

Treated as a small, dark form of *O. machadoi* Longfield, 1955 by Pinhey (1970b: 305). The holotype and other males identified as *rhodesiae* appear to have the hamule distorted, because the hook has been pushed inwards.

***rougeoti* (*Zygonyx*)** Pinhey, 1960: 514. — 18322; *Zygonyx rougeoti* Pinhey/ ♂/ (♀ seen, deep orange brown wings)/ leg. E. Pinhey; HOLOTYPE ♂/ *Zygonyx/ rougeoti*/ Pinh./ 1959; WIDDICOMBE/ BRITISH CAMEROONS/ II - 1958/ Nat. Museum/ S. Rhodesia.

Junior synonym of *Z. speciosus* (Karsch, 1891) (Pinhey 1964a: 127).

***saegeri* (*Orthetrum*)** Pinhey, 1966c: 44. — 12310; *Orthetrum abbotti/ saegeri* Pinhey ♂; Holotype ♂/ *Orthetrum/ saegeri*/ Pinhey 1963; Congo Belge, P.N.G./ Miss. H. De Saeger/ PFSK.22/8, 10.VI.52/ H. De Saeger 3608.

The presence of the holotype in NMBZ is contrary to Pinhey (1966c), who stated it is in the Institut des Parcs Nationaux, now incorporated in MRAC. The combination *O. abbotti saegeri* on the envelope is remarkable, as the two taxa are not similar (Figs 7a, c). Pinhey (1984) calls this “an uncommon dark species of swamp forest”. I have encountered singletons at swampy spots near rainforest streams in W Uganda, C Congo-Kinshasa and S Ghana.

[*socotrensis* (form *Trithemis arteriosa*) Pinhey, 1970a: 65. — 16761; *Trithemis arteriosa socotrensis*/ Pinhey/ ♂; Holotype ♂/ *Trithemis arteriosa* (Burm.)/ f. *socotrensis* Pinhey (1968); Nankad/ Socotra/ 23-3-1953/ G. Popov.]

Dark variety of *T. arteriosa* (Burmeister, 1839).

sulci (*Tetrathemis*) Pinhey, 1962b: 44. — 11197; *Tetrathemis sulci* Pinhey/ ♂; HOLOTYPE ♂/ *Tetrathemis/ sulci/* Pinhey 1960; DOU[A]LA/ FRENCH CAMEROONS/ III - 1958/ Nat. Museum/ S. Rhodesia.

Separated from *T. camerunensis* (Sjöstedt, 1900: 36 in *Neophlebia*. Kitta, Cameroon; NHRS) and *T. bifida* Fraser (1941: 138. Bwamba, Uganda; BMNH) solely by the depth and shape of the epiproct incision (Fig. 10a). This cannot be determined for *T. camerunensis* as Sjöstedt (1900) did not describe the epiproct and the holotype lacks S5-10. However, the epiproct shape varies gradually and does not allow the separation of discrete taxa (G.S. Vick in litt.). Several specimens labelled as '*T. cowleyi*' including a holotype (Entebbe, Uganda; NMBZ — E. Pinhey, 1960) and a manuscript holotype of '*T. martorelli*' (Bata, Rio Muni; UCME — A. Compte, 1963), are further evidence of the variability in this complex. The above specimens are all similar, including the diagnostic lateral pale spot on S1 (Fig. 10b) that does not extend (or hardly so) onto S2 as in other African *Tetrathemis* (Fig. 10d) [new synonymy].

toddii (ssp. *Orthetrum chrysostigma*) Pinhey, 1970b: 280. — 12726; *Orthetrum chrysostigma toddii*/ Pinhey/ ♂; Holotype ♂/ *Orthetrum/ chrysostigma toddii/* Pinhey 1970; Kasawe Forest Res./ Sierra Leone/ 16-iv-1965/ Nat. Museum/ S. Rhodesia.

A fairly small, darkish variety of *O. chrysostigma* (Burmeister, 1839), in which the characteristic pale 'epaulet' marking on the mesepimeron is very indistinct.

victoriae (*Archaeophlebia*) Pinhey, 1963a: 3. — 11262; *Archaeophlebia victoriae*/ Pinhey/ ♂; Holotype ♂/ *Archaeophlebia/ victoriae/* Pinhey 1963; Victoria Falls/ Rhodesia/ II - 1957/ Nat. Museum, S.R.; *Archaeophlebia/* Det. E.C.G. Pinhey.

Junior synonym of *Tetrathemis polleni* (Selys, 1869) (Pinhey 1984: 34), as shown also by the appendages (Figs 10f, g) and the thoracic markings (Fig. 10e) that differ from those of all other African *Tetrathemis* species (Fig. 10c).

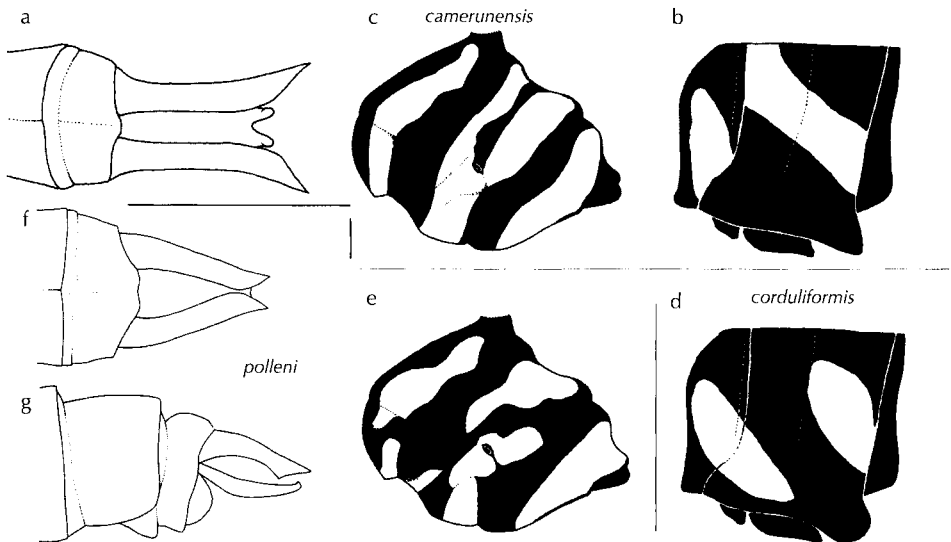


Figure 10: *Tetrathemis* males — [a-c] *T. camerunensis* — (a) appendages in dorsal view, (b) S1-2 in lateral view, (c) synthorax in lateral view; (d) *T. corduliformis*, S1-2 in lateral view; [e-g] *T. polleni* — (e) synthorax in lateral view, (f) appendages in dorsal view, (g) same, lateral.

watulikii (*Aethiothemis*) Pinhey, 1962b: 46. — 13767; *Aethiothemis watuliki*[i] Pinhey/ ♂; HOLOTYPE ♂/ *Aethiothemis/ watuliki*[i]/ Pinhey 1960; MAMBILI FOREST/ Ouessou/ M. CONGO/ VI - 1960/ Nat. Museum/ S. Rhodesia.

In comparison with *A. basilewskyi* Fraser (1954: 262. Gele, Congo-Kinshasa; MRAC), Pinhey (1962b) only stated that *A. watulikii* “differs in having narrower antehumerals on the thorax and the sides are mainly black with pale stripes instead of the reverse”. The two syntopic males of *A. basilewskyi* in MRAC also differ slightly in the extent of dark markings on the frons and thorax, but the holotype of *A. watulikii* does not differ in build, venation and genitalia (Fig. 11) [new synonymy]. The species is thus far known only from three males from the central Congo Basin. However, NMBZ possesses two teneral females from NW Zambia listed by Pinhey (1984) as *Monardithemis flava* (Dijkstra & Vick 2006).

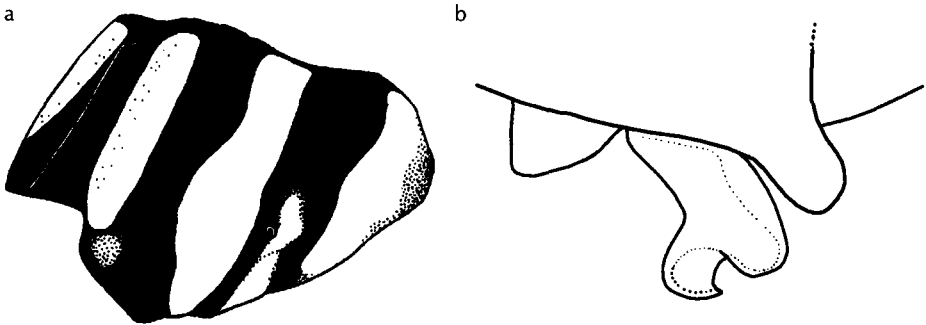


Figure 11: *Aethiothemis basilewskyi* male — (a) synthorax in fronto-lateral view; (b) secondary genitalia, penis omitted, in lateral view.

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